## New or Interesting Species from Montana.

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*Dicranoweisia compacta* (Schleich.) Schimp. An alpine species growing in compact tufts with smaller leaves than the preceding (*D. crispula*), basal leaf-cells shorter and thinner walled and teeth not so deeply inserted under the mouth of the capsule. Forty-mile Cr., Blackfeet Ind. Reserv.; Essex, G. N. Ry., 7,000 ft.; Stanton Lake, Rocky Mts., 7,000-8,000 ft. (422).

*Dichodontium flavescens* (Dicks.) Lindb. A common species in the Rocky Mts. of northern Montana, on wet rocks about the falls and along streams. Distinguished from any form of *pellucidum* by the leaves comparatively smooth above and teeth of the margin separated by 3–5 or more intervening cells. In the preceding (*D. pellucidum fagimontanum*) each marginal cell forms more or less of a tooth in the upper part of the leaf (269).

*Dicranum hispidulum* n. sp. (Plate 34) Monoicous, perigonium close under the perichaetinum, of 4 or 5 broad, more or less pointed leaves mostly costate. In compact tufts much like the smaller forms of *D. Starkei*. Stems usually without radicles and few branches, up to 2.5 cm. high, the cross-section nearly round, .180 mm. in diameter, with distinct central strand and outer cells with but slightly thickened walls. Leaves spreading all around, rough on back and margins above with irregular, mamillate papillæ, ovate-lanceolate, 1½ mm. long, cross-sections showing no stereid band or distinct guide cells, the cells on either side of costa near middle of leaf often doubled for five or six rows outward. Costa excurrent, usually .040–.050 mm. wide at the base and .050–.080 mm. above. Leaf cells scarcely elongated and irregular in upper part, medium cells .010 mm. wide and .010–.020 mm. long, alar cells forming a distinct group of somewhat enlarged, nearly square or inflated more or loss colored cells. Cell walls not pitted or distinctly thickened. Capsule oval, slightly curved before opening and barely strumose, 1½ mm. long without lid. Lid obliquely rostrate, about ¾ mm. high. Exothecal cells rectangular, 2-4 times longer than broad. Well developed annulus of 2-3 rows of cells. Teeth split to below the middle. Smooth spores up to .012 mm.

This species is somewhat intermediate between *H. Starkei* and *H. falcatum*. It differs from both in the leaves being only half as long and scarcely falcate or secund. The first also has leaf-cells with thickened and pitted walls and cells twice longer, while the second has a poorly developed annulus, alar cells less distinct, and the exothecal cells shorter and broader, from roundish to one and one-half times longer than wide.. Collected at head of Macdonald Lake, Aug. 3, 1895, with capsules not quite mature (323).

Barbula perannulata n. sp. (Plate 36). Dioicous. Plants small, ⅓–1 cm. high. Upper leaves mostly linear with broad, obtuse or slightly acute point. Outer perichaetial leaves very similar with slightly enlarged base, the middle with a more or less distinct limb, and the 2 or 3 inner, convolute with a distinct, narrowed point usually ¼ or more the length of the clasping

part, the outer perichaetial leaves extending to or above the tips of the inner Upper leaves up to 2 mm. long, deeply channeled and crenulate-papillose on the margin above, lower leaves 1 mm. or less, all with flat borders and costa vanishing below the apex. Leaf-cells distinct, roundish above, .006–.008 mm. in diameter with 1 or 2 papillæ to each cell. Lower cells hyaline, somewhat irregular, 2–4 times longer than wide. Capsule ovate-oblong, with lid up to 2½ mm. long, the lid often nearly as long as the capsule. Annulus large, of 3 rows of cells. The twisted papillose teeth form a solid basal membrane about ⅙ the height of the teeth. Mouth of capsule with 5 or 6 rows of small roundish cells with groups of 4 or 5 twice larger cells interspersed here and there. Smooth spores up to about .008 mm.

This species is near *convoluta*, but may be distinguished at once by the perichaetium. In *convoluta* the sheathing leaves project one-half or more above the tips of the next surrounding leaves and are mostly truncate-crenulate or with a very short point. On earth, June 18, 1894, Columbia Falls (292). Also collected by J. B. Leiberg, Traille River Basin, Idaho (190).

*Pohlia atropurpura* (Wahlenb.) Lindb. fil. Columbia Falls, on wet gravel about springs, May. I am indebted to Harald Lindberg, fil., for the determination of this species. It is dioicous, exanulate, teeth of peristome dark ferruginous, stomata superficial, leaves not or scarcely decurrent, seta large and fleshy above while growing. The leaves are narrower and less serrate than in *carnea* which has light colored teeth. Not before credited to America, I believe (297).

*Pohlia vexans* (Limpr.) Lindb. fil. Tenderfoot Cr., on Belt Mts., on rocks, Oct. Also determined by Harald Lindberg. It is certainly near *pulchella*, which according to Lindberg, has a well differentiated annulus. *P. vexans* is supposed to have no annulus but my specimens show a tendency to produce an annulus (in the well-developed capsules) of 1 or 2 rows, slightly smaller, but otherwise scarcely different cells that mostly remain attached to the lid, breaking away in small fragments. This is about like the annulus described for *pulchella* in Lesq. & James' Manual. The Montana plant is dioicous, with decurrent leaves, costa red at base and broad, ⅓ the width of leaf base with leaf-cells long and narrow above, often 1-6 (145).

Bryum Williamsi Philibert, Rev. Bryol. **28**:31, 1900. (Plate 38). Dioicous. In compact tufts felted with radicles below and up to 3 cm. high. Stems somewhat branching, rather uniformly leaved above. Leaves erect, imbricated both wet and dry, broadly ovate-lanceolate, entire or minutely serrulate at apex, up to 2 mm. long, flat on borders or recurved along the middle, with 2 or 3 rows of narrow, elongated cells forming a distinct margin. Stout red costa, .080 mm. wide at base, percurrent or ending 1 or 2 cells below apex. Leaf-cells rather elongated rhomboidal to rectangular, median, .050–.060 mm. long and .016–018 mm. wide, all with thickened but not pitted walls. Capsule elongated-pyriform, not contracted below the small mouth, up to 4 mm. long, with distinct-collum equalling sporangium in length. Lid rather low-convex mamillate. Annulus large. Teeth somewhat papillose, with narrow border, the outer plates below 2½–3½ times

broader than high, inner lamellæ up to 30, parallel and not connected or irregular and joined by very oblique cross-walls. Basilar membrane of endostome extending about ½ up, the segments very narrow and papillose with narrow slits between articulations; cilia 2 or 3, and short or nearly equalling segments in length and more or less appendiculate. One or two rows of transversly elongated cells about mouth of capsule. Seta up to 4 cm. high. Nearly smooth spores up to .024 mm.

Growing in very damp or wet crevices of rock by springs. July 6, 1888, Missouri River bank below Great Falls. This species is near *Muhlenbeckii* but differs in the very narrow segments of the endostome with narrow slips between the articulations, not rounded perforations, the leaf-cells also are more elongated above and less regularly short-rectangular below (19).

*Brachythecium velutinum intricatum* (Hedw.) Br. & Sch. Columbia Falls, April. Western plants undoubtedly average somewhat larger than eastern or ordinary European specimens. I have found the stem leaves of Montana plants up to 2.25 mm. long. Limpricht gives 1.8 mm. for the species but there are two European varieties with large leaves (up to 2.10 mm.) and the common Montana form exactly matches in appearance the variety as given above (257).

*Brachythecium collinum subjulaceum* Pfeffer. Divide Mt. and Two-Medicine Lake, Blackfeet Ind. Reservation. Growing in moister, more shaded places, of larger size with larger, less imbricated leaves (435).

*Hypnum intermedium* Lindb. Columbia Falls. Stem sections of this plant show an outer wall of large, thin cells next several rows of thickened cells and a distinct central strand. In appearance it is much like *revolvens* and *Sendtneri* (414).

*Hypnum styriacum* Limpr. Belt Mts., Columbia Falls, Forty-mile Cr. and Cut-Bank Cr., Blackfeet Ind. Reservation, 5,000 ft. Aug. Not before credited to North America. It is somewhat like a slender form of the preceding (*H. palustre*) with more distant, curved and spreadin leaves. The leaves are also rather more pointed, often distinctly serrulate on the margin below, and vein weaker, usually slightly forked above. The flowers are clustered along the stem, often 2 or 3 ♀ and 1 ♂ and the outer perigonial leaves are figured by Limpricht as distinctly 3-toothed; this character is variable however in authentic specimens received from J. Breidler, the original collector of the species in the Alps of Austia (400).

*Hypnum giganteum dendroides* Limpr. Plants with lower branches often long, and all the branches with more or less numerous branchlets. The stem leaves are comparatively long and narrow, 3½ by 1¾ to 2 mm., in this respect approaching *cordifolium*, but they have the abruptly inflated alar cells of *giganteum*. Belt Mts., Columbia Falls (219).